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INSTITUTIONAL BARRIERS ON DOD LABORATORIES

A REPORT OF THE AD HOC TASK GROUP

ON

IN-HOUSE LABORATORIES

TO

THE DEPUTY UNDER SECRETARY FOR RESEARCH AND ADVANCED TECHNOLOGY

SEPTEMBER 1979



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MEMORANDUM FOR DISTRIBUTION

SUBJECT: Removal of Institutional Barriers Inhibiting Effective DoD  
Laboratory Management

You will recall that as a result of the 1978 Laboratory Directors' Conference, I established a task group to examine the impact of management constraints on the DoD Laboratories. This group, consisting of representatives from the three Services and my office, has prepared the attached report which summarizes its findings.

The task group has proposed a fundamental change to the present diverse mechanisms used to control resource expenditures at the laboratories. While the attached report has not been formally endorsed by DoD, I view it as an excellent statement of the problem and I will work to assure that it receives serious consideration in determining actions to be taken to improve the management of DoD laboratories.

Ruth M Davis

Ruth M. Davis  
Deputy Under Secretary of Defense  
for Research and Engineering  
(Research and Advanced Technology)

Attachment

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TABLE OF CONTENTS

	<u>Page</u>
SUMMARY .....	1
A. INTRODUCTION .....	2
Background .....	2
Participants .....	2
Significance of the In-House Laboratories .....	2
B. APPROACH .....	2
C. FINDINGS .....	3
Identification of Barriers .....	3
Characteristics .....	3
Impact .....	4
Other Factors Governing Laboratories .....	5
D. PROPOSAL .....	6
Rationale .....	6
Integrated Control .....	7
Implementation .....	8
E. CONCLUDING REMARKS .....	9
APPENDIX A - EXISTING BARRIERS .....	10

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#### SUMMARY

At the request of the Deputy Under Secretary of Defense for Research and Engineering (Research and Advanced Technology), a task group of senior research and development executives examined barriers to effective performance of in-house laboratories. This effort was in part motivated by:

Perception of conflicting controls on laboratories, informally transmitted to ODUSDRE at the Gaithersburg Laboratory Directors meeting and by personal correspondence, and Congressional interest in recent years but particularly during the FY 79 HASC hearings.

The task group verified that there are a variety of controls on laboratory operations, common to the three Services, which taken collectively seriously limit the effective use of laboratory resources. The individual controls, based on the legitimate exercise of authority, are motivated by the need to limit costs. It is the observation of this task group that the laboratories are being seriously affected by a collection of controls which limit their capability to exercise substantive and effective management in meeting mission requirements and exploiting technological opportunities.

Modifying individual controls as a solution to this situation disguises the adverse effect that the individual controls collectively produce. Consequently, the task group believes that the problem should be approached from a fundamental point of view, aimed at accomplishing the objectives of the controls while simultaneously improving effective laboratory management.

The task group recommends that a single control mechanism be adopted to govern the level of internal laboratory operations. For example, as part of the normal budget cycle, a dollar ceiling on the total Civil Service payroll expenditures could be established for each laboratory. Laboratory management officials then would have the requisite authority and responsibility for operating within this ceiling and individual resource constraints should be eliminated.

The intent of such a recommendation is not the elimination of control; rather, it is the introduction of a different form of control which will:

- Meet the public's legitimate expectation of efficiency, economy, and effective use of manpower in government.
- Strengthen the capabilities of laboratory management officials through the assignment of appropriate authority to match their demanding responsibilities.

- Improve the effectiveness of the DoD research and development laboratories by permitting the relief from inhibiting barriers.

#### A. INTRODUCTION

##### Background

At the request of DUSDRE(R&AT), a task group of senior technical executives from the three Services was formed to examine the nature and impact of various management controls as they apply to the in-house laboratories. This effort was motivated by questions raised during the FY79 budget hearings before the HASC R&D Subcommittee, as well as by the concerns expressed by technical directors at the 1978 Laboratory Technical Directors Conference.

##### Participants

Each of the participants in this task group was designated by his respective Service Assistant Secretary for R&D. Dr. B. Kulp represented the Air Force, Mr. N. Klein the Army<sup>1</sup>, and Dr. Probus, Mr. Colvard, and Dr. Berman represented the Navy. Each of these senior executives was supported by senior personnel from headquarters and the laboratories.

##### Significance of the In-House Laboratories

To put the study in perspective, it should be noted that the in-house laboratories represent an investment of \$4.0 billion in real estate and equipment, employ 60,100 people, and have an annual budget of \$5 billion. The role of the laboratories is multifaceted. They pursue new technological concepts that hold promise to benefit the defense of this nation; they support the Services in the acquisition and evaluation of new systems and other material (smart buyer concept); and they provide technical support during production and in the field, thus providing a corporate memory that allows an infusion of lessons learned into new developments. Finally, because of their unique position, the laboratories have comprehensive access to intelligence and proprietary information. This allows them to assess the seriousness of the Soviet technological challenge, reduce the possibility of technological surprises, and to develop effective interfaces with private sector performers.

#### B. APPROACH

The task group's initial job was to define the problem. Each participant was requested to compile a listing of management controls impacting his respective area of responsibility along personnel, fiscal, and organizational lines, supported by background discussion material. Included in the latter was to be an identification of the source of each control, to

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1. Mr. Klein has retired. His replacement is Mr. J. Spates.

enable the group to determine whether they were common to all laboratories or, conversely, whether the three Services were applying different controls on their respective laboratories. Participants were also asked to formulate tentative recommendations for the group's consideration which, if implemented, would improve the general operating environment of the laboratory community.

As a second job the task group undertook to examine the appropriateness of more fundamental changes to laboratory management. Its objective was the synthesis of a new management concept which would allow the laboratories a maximum of flexibility within a framework of controls that are operationally feasible and acceptable.

#### C. FINDINGS

##### Identification of Barriers

From the results of this effort, the task group had little difficulty in agreeing on two immediate findings. First, an extensive and diverse array of controls on the DoD laboratories does indeed exist. Second, aside from some differences in implementation among the Services, the controls are practically universal in application across all laboratories. The material collected and prepared by the group--which supports these findings--includes lists of existing controls, point papers addressing specific issues, and comments on the impact of controls from management officials at both Headquarters and laboratory levels. Appendix A provides a condensed listing and description of the barriers identified in this task.

##### Characteristics

Further examination revealed that these controls can be generally described in terms of the following characteristics:

- They originate from staff offices and organizations outside the RDT&E line management chain (that is, from offices not directly responsible for managing and executing the DoD RDT&E program);
- They prescribe limits on the use or consumption of particular resources;
- They are usually expressed in quantitative terms; this sometimes results in mechanistic approaches to implementation and assessment;
- They are administered through hierarchical levels of staff offices. At any of these levels, a control may be increased (made more restrictive on subordinate levels), but is not decreased; and

- Perhaps most significantly, they are independent of the purposes served (or intended to be served) by the resources which they control.
- Controls have been applied piecemeal without apparent regard for other existing controls.

The result of these constraints is that the R&D laboratories today are overcontrolled by the imposition of numerous limitations that are largely independent of one another. Viewed separately, each of these controls represents an appropriate exercise of authority by higher management echelons over subordinate levels within the Defense organization. Each has a legitimate purpose. But their impact on the laboratories is negatively cumulative. Viewed separately, each is a form of suboptimization: an attempt to "optimize" (usually, to minimize the cost of) some particular aspect of laboratory operation without regard for the total organizational and program responsibilities of each laboratory.

#### Impact

These controls are viewed universally throughout the R&D laboratory community as barriers to effective management. They restrict the authority of senior laboratory officials to direct the operations of their respective organizations by inhibiting management flexibility. Their real impact, however, is far more than simply providing a source of irritation or frustration to management personnel--they are adversely affecting the laboratories' abilities to carry out the technical programs for which they are responsible.

Of all the laboratories' resources, the most valuable are clearly the capability, skill, and talent of their technical personnel. It is not surprising, therefore, that the participants agree unanimously that constraints on the employment and utilization of personnel are the most destructive of the laboratories' abilities to meet their responsibilities. Some examples of these constraints are personnel ceilings, high-grade controls, hiring freezes, limitations on appointment and classification authority, average grade controls, and promotion freezes. The committee does not challenge the authority of higher management echelons to impose such constraints. Nonetheless, the number of personnel constraints is considered excessive; they are often redundant and even conflicting; and--most importantly--they are frequently changed during the course of a fiscal year. To the extent that these changes are independent of a laboratory's planned, approved, and funded workload (as is usually the case since the constraints originate outside the RDT&E management chain), they appear arbitrary to laboratory managers.

Virtually all of the constraints imposed on Laboratory operations have their fundamental origin in a desire to reduce or limit the cost of Government operations. The members of this task group, of course, have no

reservations whatever in accepting this objective. But at the same time we recognize that the Laboratories must use the resources available to them if they are to be productive, contributing members of the DoD RDT&E community. Decisions as to how these resources are used, ought to be based on the objectives of the technical programs for which they were allocated. In our opinion, this means that these decisions should be made by those who will be held accountable for meeting the objectives: line management officials at the Laboratory level.

This is not an argument that the Laboratories should be autonomous organizations. On the contrary, they must be highly responsive to National military requirements, and the results of their efforts should be continually judged in terms of these requirements.

#### Other Factors Governing the Laboratories

A wide variety of established policies, instructions, and procedures provide substantive management direction to the laboratories, authoritatively describing why they exist, what they are intended to accomplish, and how they are permitted to operate. Their basic role is established by the fact that they are component organizations of their respective services and of the Defense Department, oriented toward national security objectives and operating with defined mission responsibilities. Their technical efforts are neither initiated nor pursued in a vacuum, but are in response to stated defense needs and requirements and must be reviewed and approved under established program planning, budgeting, and appropriation procedures. Laboratory resources to carry out their technical programs, and the legal authority to use those resources for the purposes intended, are provided only after these procedures have been followed. Finally, like all Government organizations, Laboratory operations are governed by appropriate Federal statutes and policies, and are subject to periodic inspection, audit, and review.

The factors discussed in the preceding paragraph serve to "bound" the respective sphere of responsibility, authority, and technical effort for each Laboratory. In the absence of the specific operating constraints examined by this committee, the Laboratories would have sufficient management latitude to operate within these bounds. At the same time, the bounds would effectively govern the overall level, nature, and direction of each Laboratory.

The requirements that the R&D Laboratories meet their program objectives and that they do so efficiently and economically are not incompatible. The question arises, however, as to whether resource limitations aimed at promoting efficiency and economy should be specified in detail and imposed from outside the Laboratories, or whether Laboratory management officials should be assigned the responsibility for operating within total programmed resource levels. In the task group's view, the latter would be preferred for a number of reasons:

- It would permit technical program management decisions to be made at operating levels closest to program execution.
- Increased managment flexibility at the Laboratory level would carry with it increased responsibility and accountability for results.
- A means for assessing the performance of Laboratory management officials would be provided.

The removal of the institutional barriers described here would assist implementation of the spirit as well as the letter of the recently enacted Civil Service Reform Act. Some of the key features of this legislation are aimed at strengthening the capabilities of senior executives, and holding managers accountable for their programs. There is an obvious incompatibility between the requirement that a Laboratory Director be held accountable for results on the one hand, and restrictions on his authority to use approved and available resources to achieve those results, on the other. As long as the institutional barriers remain in effect, true authority and responsibility will be divorced from one another to the detriment of the laboratories' technical programs.

#### D. PROPOSAL

##### Rationale

In discussing the different approaches which could be taken to resolve the problems caused by these institutional barriers, the group considered addressing them individually and formulating a separate request for relief from each control. This approach was rejected for a number of reasons. First, it would have served to mask the collective impact of the controls taken together which is of primary concern. As mentioned previously, each control represents suboptimization; dealing with them separately would have similarly suboptimized the group's efforts. Second, the group believes such an approach would at best provide only a temporary solution. Elimination of existing controls would not, in itself, necessarily prevent their reestablishment in the future. Finally, the group recognizes that an appeal to higher authority for directed relief from individual controls does not solve the underlying philosophy of control that leads to micro-management.

Rather than pursue a piecemeal approach, the group presents a proposal for a single control mechanism that could replace the present constraints without interfering with the oversight and control responsibilities of higher management echelons. The essential elements of this proposal are an extension and modification of the Project REFLEX experiment conducted in the early 1970's.

### Integrated Control

REFLEX provided participant laboratories greater personnel flexibility in that they were relieved of ceiling limitations, but REFLEX lacked a priori control over personnel levels. The proposed concept would add that control in the form of a previously established ceiling on the total Civil Service payroll expenditure allowed at each R&D laboratory within a fiscal year. Operating within this control ceiling, laboratory management officials would have the authority to implement local work force planning decisions concerning staffing levels, skill mix, grade structure, hiring, promotion, etc.

It is extremely important to note that the "bounds" discussed earlier would remain in effect under this concept. Two in particular deserve attention:

- The procedures by which the R&D laboratories' technical programs are approved and funded would not change. The payroll authority granted under integrated control would be a ceiling, not a funding appropriation or authorization.
- Civil Service regulations and statutes would continue to govern personnel management decisions with regard to employment qualifications, merit promotion principles, employee classification, pay and wage schedules, etc. integrated control would not enlarge upon laboratory management's present authority in any of these areas.

The integrated control concept would have its impact felt in a number of areas:

- It would effectively control the general level of civilian employment at the R&D laboratories. The combination of payroll ceiling, available funding, program responsibilities, and personnel regulations would govern local management's ability to increase the number of people employed.
- It would permit the elimination of a number of existing barriers intended to control specific categories of resources, since these controls would become unnecessary (e.g., high grade controls).
- The efforts of Headquarters staff personnel now engaged in implementing and administering these controls could be redirected toward more appropriate management responsibilities, such as long range planning and program assessment.

- The unitary control mechanism of integrated control--as contrasted with the present mixture of different and sometimes conflicting controls--would provide for greater stability and predictability in Headquarters-level fiscal planning.
- Integrated control allows management to focus attention on the primary mission of the laboratory.
- The task group notes that the operating concept which it is recommending is fully consistent with the spirit and intent of the Civil Service Reform Act.

The management concept described in this proposal is more than a statement of accepted "principles of good management". It recognizes that R&D organizations and people are unique resources and must be effectively managed. Most importantly, the concept is needed because the capability of our in-house laboratories to function as productive, contributing organizations is being eroded by the imposition of more and more controls which dictate--often in precise detail--how they may use their available resources. Individually, each of these controls is intended to promote efficiency, economy, and effectiveness in Government; but, almost invariably, they deal exclusively with only the first two of these parameters. An improvement in the effectiveness of the laboratories, however, is desperately needed to meet the serious technological challenge of the nation's potential adversary.

#### Implementation

The mechanics of implementing the integrated control concept would be relatively straightforward.

Existing budgeting procedures already require that each R&D laboratory prepare an "operating budget" annually. This budget includes the laboratory's planned expenditures for civilian payroll and fringe benefits during the budget year. The budget is reviewed and approved within the laboratory's Headquarters organization. The laboratory budget is consolidated with other operating budgets for submission to higher echelons within the Service and DoD (along with program budgets); and, following OMB review and approval, the R&D Laboratory budget eventually becomes part of the President's budget submitted to the Congress.

This same procedure could be the basis for establishing each laboratory's payroll ceiling under integrated control. Subsequent to Congressional funding authorization and appropriation, control would be exercised over this cost; changes in overall employment levels from year to year would be effected through the budget approval process. Congressionally approved pay increases which differed from budgeted figures would be reflected in automatic adjustments to each laboratory's payroll ceiling.

#### E. CONCLUDING REMARKS

The members of this committee are convinced, based on our prior experience as well as our work with the task group, that the capabilities of the DOD Laboratories are being fundamentally impaired by the imposition of management constraints. There is no question in our minds that the in-house Laboratories have vital and unique roles to play in helping to meet both the long-term and short-term technological needs of the Military Services. The Laboratories exist not merely to administer routine, stable government programs--but to actively participate in and contribute to all phases of the RDT&E process. This process is characterized by an environment of uncertainty, change and the threat of a dedicated adversary; it should be supported by a management environment which allows the necessary flexibility to adapt to changing needs and opportunities. In short, the DOD Laboratories today need more freedom, not more constraints.

## APPENDIX A - EXISTING BARRIERS

1. Personnel. Personnel as most important resource in any activity, doubly so for the creativity demanded of research, technological specialization.

- o Limits on recruitment to bring young talent in or required expertise for new mission.
- o Limits on ability to retain experience, particularly constraints on high grades.
- o Internal personnel procedures including formal manpower management programs.

### Recruitment

- o Periodic hiring freezes.
- o Entry level salaries are low compared to industry offers.
- o Limited promotion potential (high grade ceilings, CSC standards).
- o Decline of challenging work (A-76, decline in R&D funding), particularly in the 6.1, 6.2, and 6.3A areas.

2. Fiscal

### Availability of Funds

- o Inadequate recognition of inflation factors.
- o Insufficient funds to replace old equipment and acquire state-of-the-art instrumentation.
- o MILCON funding limits inadequate to replace obsolescent facilities.
- o Travel funds inadequate to meet program requirements.

### Flow of Funds

- o Budget/appropriation cycles do not permit smooth funding authority.
- o Rate stabilization. Applied too early, restricting flexibility in allocation of personnel resources. Concerns industrially funded activities.

- o MILCON funding procedures lengthy, impeding replacement of obsolescent facilities.

Management of Funds

- o Procurement restrictions. \$100,000 D&F threshold.
- o Procurement restrictions. Length of cycle.
- o Excessive programming justification and procedures.
- o Present implementation of industrial fund concept overly restrictive.
- o Incremental funding forces non-optimum program execution and contracting.

3. Organizational

- o Perception of the role of the laboratory inconsistent between and within the Services.
- o Technology base programs suffer in several ways.
  - o Fragmented programs
  - o Program elements have multiple sponsors
  - o Micromanagement
  - o Technologists not involved in the planning process
  - o Funding insufficient
  - o Lengthy and complex procurement cycles.
  - o Disconnect between funds and manpower
  - o Regulatory constraints (OSHA, EPA)
  - o Excessive low utility audits
  - o Excessive reporting requirements
  - o Complex travel regulations
  - o Proposed OMB Circular A-76 does not recognize unique characteristics of R&D.

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<u>CBIL</u>	Commander US Army Construction Engineering Research Laboratory P.O. Box 4005 Champaign, IL 61820	COL Louis J. Cincero, Jr. Commander CERL-V AV 862-1110 Ext: 352-6511	Dr. L. R. Shaffer Technical Director CERL-VT AV 862-1110 Ext: 352-6511

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(September 1979)

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